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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/687,425	10/16/2003	Jeffrey Eldon Fish	KCX-838 (18843)	7967
22827	7590	09/06/2007	EXAMINER	
DORITY & MANNING, P.A. POST OFFICE BOX 1449 GREENVILLE, SC 29602-1449			SASAN, ARADHANA	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/687,425	FISH ET AL.	
	Examiner	Art Unit	
	Aradhana Sasan	1615	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 18 December 2006.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-25 is/are pending in the application.
 - 4a) Of the above claim(s) 24 and 25 is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1-23 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 16 October 2003 is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date See Continuation Sheet.
- 4) Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) Notice of Informal Patent Application
- 6) Other: _____.

Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date :6/4/07, 11/2/06, 5/25/05, 1/19/05, 11/18/04, 7/14/04, 6/14/04, 4/22/04, 2/2/04.

DETAILED ACTION

1. Receipt is acknowledged of applicant's response to Restriction Requirement filed on 12/18/06.

Status of Application

Election/Restrictions

2. Applicant's election with traverse of Group I (claims 1-23) and the species identified as "silica" in claim 8 and "copper ion" in claim 9 in the reply filed on 12/18/06 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

The restriction requirement is still deemed proper and is therefore made FINAL.

3. Claims 24-25 are withdrawn from consideration.
4. Claims 1-23 are being presented for examination.

Information Disclosure Statement

5. The information disclosure statements (IDS) submitted on 6/4/07, 11/2/06, 5/25/05, 1/19/05, 11/18/04, 7/14/04, 6/14/04, 4/22/04, and 2/2/04 were filed. The submissions are in compliance with the provisions of 37 CFR 1.97 and 1.98. Accordingly, the examiner is considering the information disclosure statements.

See attached copy of PTO-1449.

Specification

6. The disclosure is objected to because of the following informalities: "pultrusion" is misspelled "pultrision". Appropriate correction is required.

Claim Rejections - 35 USC § 112

7. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

8. Claim 5 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The specification, on Page 11, lines 23-26, recites:

"nanoparticles useful in this invention have a suitable surface area of at least about 50 square meters/gram, suitably at least about 100 square meters/gram, and more suitably at least about 200 square meters/gram, and still more suitably at least about 500 square meters/gram or more". The specification does not provide for nanoparticles having a surface area of "at least about 800 square meters/gram".

9. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

10. Claims 3-5 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The term "at least about" is a relative term, which is not defined by the claim, and renders the claims indefinite. The specification does not provide a standard for

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ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 1-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rohrbaugh et al. (US 2002/0151634 A1) in view of MacDonald (US 2003/0203009 A1).

The claimed invention is an extrudate comprising a high surface area material and at least one metal ion adsorbed onto the high surface area material. The extrudate is capable of binding gaseous compounds and odorous compounds.

Rohrbaugh teaches coating compositions comprising a nanoparticle system and articles of manufacture that create multi-use benefits to the modified surfaces including malodor control (Abstract). The soft surfaces that are coated include fabrics, such as nonwoven fabrics (Page 2, [0025]). The soft surfaces may comprise fibers from mineral sources such as polyolefin fibers (Page 2, [0026]). Nonwoven fabrics are disclosed (Page 3, [0030] to [0031]). The nanoparticles diameter can be between 0nm and 750nm (Page 5, [0044]). It is also disclosed that inorganic nanoparticles generally exist as silicates (Page 5, [0046]). Surface molecules can be associated with surfaces of the nanoparticles (Page 5, [0045]). The surface of the nanoparticles may be "functionalized" by the association with charged functionalized surface molecules including multi-valent

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inorganic salts consisting of Cu⁺² (Page 8, [0069]). It is also disclosed that "the materials that have been subjected to a high energy surface treatment and have a plurality of nanoparticles deposited thereon can be suitable for a great many uses including, but not limited to use to transport liquid in articles such as clothing containing hydrophobic or borderline hydrophilic fibers and in portions of disposable absorbent articles" (Page 14, [0139]). Examples 14-15 and 20-21 include nanoparticle coating compositions (Page 19, Tables 2 and 4).

Rohrbaugh does not expressly teach the surface area of the nanoparticles, a breathable film, the specific Zeta Potentials of the nanoparticles, odor absorbing personal care products such as diapers or adult incontinence products, and packaging for fruit for inhibiting ripening.

MacDonald teaches: "modified high surface area materials useful in neutralizing or removing gases and/or odorous compounds. The high surface area material, such as a nanoparticle, is coated with metal ions that can bind with gas molecules and/or odorous compounds. The modified high surface area materials can be incorporated into various industrial and consumer products including absorbent articles, ... fabrics, and paper towels" (Page 1, [0001]). The "modified high surface area materials have active sites that bind at least one gaseous compound and/or odorous compound ... At least one type of metal ion is adsorbed onto the surface of the nanoparticle and bound strongly to the surface ... For example, silica nanoparticles modified by copper ions ... were demonstrated to be effective in removing amine and sulfur based classes of odorous compounds" (Page 1, [0007]). It is also disclosed that the invention creates a

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gaseous compound removal system for inhibiting the ripening of plant materials (Page 1, [0008]). "High surface area materials useful in this invention have a suitable surface area of at least about 200 square meters/gram, more suitably 500 square meters/gram, and more suitably 800 square meters/gram" (Page 2, [0018]). "Nanoparticle refers to a high surface material having a particle diameter of less than about 500 nanometers" (Page 2, [0019]). "The nanoparticles useful in this invention will typically have a first Zeta Potential and a second Zeta Potential after adsorption of the metal ion onto the nanoparticle due to the addition of the oppositely-charged metal ions" (Page 2, [0021]). Examples of metal ions include copper ion (Cu^{+2}) (Page 2, [0022]). A silica nanoparticle with a negative Zeta Potential is disclosed along with a suitable nanoparticle with a negative Zeta Potential of about -1 to -50 millivolts and suitably about -1 to 20 millivolts (Page 2, [0023]). The modified nanoparticles can be used to coat a fibrous cloth (Page 3, [0032]), an absorbent article such as diaper and adult incontinence products, or as a coating on a breathable film of an outer cover of an absorbent article such as a diaper or an adult incontinence product to absorb odors (Page 4, [0035]). Silica nanoparticles modified with copper chloride as odor removing materials are exemplified (Page 4, [0039] to [0041]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to make a coating composition comprising nanoparticles for malodor control, as suggested by Rohrbaugh, and combine it with the nanoparticles coated with metal ions that can bind with gas molecules and/or odorous compounds for

use in personal care items and as packaging for inhibiting fruit ripening, as suggested by MacDonald, and produce the instant invention.

One of ordinary skill in the art would have been motivated to do this because Rohrbaugh teaches the advantage of nanoparticle coatings as providing films on the surface that are essentially invisible that may provide a transparent coating (Page 1, [0013]).

Regarding instant claim 1, the extrudate comprising a high surface area material would have been obvious to one skilled in the art over the nanoparticle system taught by Rohrbaugh and the surface area of nanoparticles taught by MacDonald. The limitation of at least one metal ion would have been obvious over the functionalized surface molecules including Cu⁺² taught by Rohrbaugh and nanoparticles adsorbed with metal ions such as copper ions taught by MacDonald.

Regarding instant claim 2, the limitation of the high surface area material and the metal ion capable of binding gaseous and odorous compounds would have been obvious to one skilled in the art over the malodor control by using the nanoparticle composition as taught by Rohrbaugh and by the odor removing nanoparticles modified with copper ions as exemplified by MacDonald.

Regarding instant claims 3-5, the surface area limitations would have been obvious to one skilled in the art over the surface area of the composition taught by MacDonald.

Regarding instant claims 6-8, 12 and 16-17, the limitation of the nanoparticle, the diameter of the nanoparticle, and the silica nanoparticle (elected species) would have

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been obvious to one skilled in the art over the teachings of silica nanoparticles with diameter of less than 750nm (as taught by Rohrbaugh) and less than 500nm (as taught by MacDonald).

Regarding instant claim 9, the limitation of the copper ion would have been obvious to one skilled in the art over the copper ion as the functionalized surface molecule as taught by Rohrbaugh and the copper ion modified nanoparticles as taught by MacDonald.

Regarding instant claim 10, the breathable film would have been obvious to one skilled in the art over the breathable film taught by MacDonald. The water vapor transmission rate would have been an obvious property that one skilled in the art could modify by varying the components of the film composition (such as the amount of film-forming polymer and amount of filler).

Regarding instant claim 11, the limitation of the olefin polymer would have been obvious to one skilled in the art over the polyolefin fibers taught by Rohrbaugh.

Regarding instant claims 13-14, the limitation of the negative first Zeta Potential of about -1 to -50 millivolts, and of about -1 to -20 millivolts would have been obvious to one skilled in the art over the negative Zeta Potential of nanoparticles of about -1 to -50 millivolts and about -1 to 20 millivolts taught by MacDonald.

Regarding instant claim 15, the limitation of a second higher Zeta Potential after adsorption of the metal ion would have been obvious to one skilled in the art over the Zeta Potential of -8 millivolts after metal ions adsorption on the nanoparticles (which is

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higher than the initial Zeta Potential of -25 millivolts) taught by MacDonald (Page 4, [0039]).

Regarding instant claims 18-21, the personal care product comprising a film layer with odor absorbing nanoparticles would have been obvious to one skilled in the art over the modified nanoparticles coating a breathable film of an outer cover of an absorbent article such as a diaper or an adult incontinence product to absorb odors as taught by MacDonald.

Regarding instant claim 22, the material for packaging and storing fruit to inhibit ripening would have been obvious to one skilled in the art over the permanganate modified alumina nanoparticles adsorbed onto a polypropylene fabric as taught by MacDonald (Page 5, Example 5).

13. Claims 1-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rohrbaugh et al. (US 2002/0151634 A1) in view of MacDonald (US 2003/0203009 A1) and further in view of Tyson (US 5,705,216).

The teachings of Rohrbaugh and MacDonald are stated above.

Rohrbaugh and MacDonald do not expressly teach a pultruded article comprising a base material and a resin containing filler having odor removing high surface area particles.

Tyson teaches an extrudate that is further processed to yield a predominantly cellulose-containing solid product (Col. 6, lines 23-25). The cellulose fibers "also find use as general purpose absorbents for such applications as diapers ... and also can be

used in any application where fibrous or particulate material is needed, including ... pultrusion ..." (Col. 7, lines 13-15). "The cellulose product ... can be incorporated into a wide range of composite materials which exhibit excellent strength, modulus, and weather-resistant characteristics ... the cellulose product ... is compatible with all commonly utilized synthetic resins, including polyolefins ..." (Col. 11, lines 51-56).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to make a coating composition comprising nanoparticles for malodor control, as suggested by Rohrbaugh, and combine it with the personal care product comprising a film layer with odor absorbing nanoparticles, as suggested by MacDonald, and further use the pultruded article, as suggested by Tyson, and produce the instant invention.

One of ordinary skill in the art would have been motivated to do this because the odor removing or absorbing nanoparticles as taught by Rohrbaugh and MacDonald would also benefit the articles such as diapers formed from the extrudate and pultruded articles taught by Tyson.

Double Patenting

14. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir.

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1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

15. Claims 1-8 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 31-32, 34, 36, 43, and 45 of copending Application No. 10/686,933 ('933 hereinafter), claims 40-42, 47, 49 and 51 of copending Application No. 10/686,938 ('938 hereinafter), and claims 36-40, 52-56, 68, 70, 72 of copending Application No. 10/686,939 ('939 hereinafter).

Although the conflicting claims are not identical, they are not patentably distinct from each other because claims 31-32, 34, 36, 43, and 45 of '933 are drawn to an absorbent article comprising a porous substrate which further contains nanoparticles formed from silica, having an average size of from about 1 to about 50 nanometers, and a surface area of from about 50 to about 1000 square meters per gram. The difference is that the claims of '933 do not include the metal ion in addition to the silica nanoparticles for odor absorption.

Claims 40-42, 47, 49 and 51 of '938 are drawn to a substrate comprising silica particles bonded to a transition metal (copper), which provides active sites for bonding odorous compounds.

Claims 36-40, 52-56, 68, 70, 72 of '939 are drawn to an odor control composition comprising particles formed from silica that are modified by a transition metal, the particles have a positive zeta potential, the transition metal provides active sites for capturing an odorous compound, the particle size is less than about 100 nanometers, the surface area of the particles is from about 50 to about 1000 square meters per gram, and copper is one of the transition metals.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the absorbent article comprising silica nanoparticles of '933 with the odor absorbing silica nanoparticles that are bonded to a transition metal of '938 and '939 and produce the instant invention.

These are provisional obviousness-type double patenting rejections because the conflicting claims have not in fact been patented.

16. Claims 1, 8-15, and 18-21 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-3, 6-9, 14-15, 17, 19-22, 25-26, 29-30, and 34-35 of U.S. Patent No. 7,141,518 ('518 hereinafter).

Although the conflicting claims are not identical, they are not patentably distinct from each other because 1-3, 6-9, 14-15, 17, 19-22, 25-26, 29-30, and 34-35 of '518 are drawn to a substrate comprising nanoparticles having a surface area of at least about 50 square meters per gram, the nanoparticles are modified with a metal ion and have a negative zeta potential prior to modification with the metal ion, the zeta potential of the modified nanoparticles is greater than the zeta potential of the nanoparticles prior to the

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modification, the substrate contains polyolefin fibers, a personal care product comprising the substrate and protective barrier clothing.

Since the instant application claims an extrudate comprising high surface area silica nanoparticles with a metal ion, with zeta potential higher after the metal ion was adsorbed on the surface of the nanoparticle, used in a personal care product such as a diaper or adult incontinence product for odor absorption it is obvious over the claims of '518 and thus they are not patentably distinct over each other.

Conclusion

17. No claims are allowed.
18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Aradhana Sasan whose telephone number is (571) 272-9022. The examiner can normally be reached Monday to Thursday from 6:30 am to 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Woodward, can be reached at 571-272-8373. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should

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you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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